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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,968	06/24/2003	Hui Ou Yang	TSM03-0042	2018
43859	7590	02/04/2005	EXAMINER	
SLATER & MATSIL, L.L.P. 17950 PRESTON ROAD, SUITE 1000 DALLAS, TX 75252			AHMED, SHAMIM	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/602,968

Applicant(s)

YANG ET AL.

Examiner

Shamim Ahmed

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/24/03 & 16 September 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
4a) Of the above claim(s) 22 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-21 and 23-25 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-21 and 23-25, drawn to a process, classified in class 216, subclass 60.
 - II. Claim 22, drawn to an apparatus, classified in class 156, subclass 345.24.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used to practice different process such as coating or the process can be used to practice by another apparatus such as one with without modifying process parameters.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with James C. Kesterson on 1/19/05 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-21 and 23-25. Affirmation of this election must be made by applicant in

Art Unit: 1765

replying to this Office action. Claim 22 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 6 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Regarding claims 6 and 17, the phrase "etching includes one selected from the group consisting of : dry plasma etching; chemical vapor deposition; sputter-deposition; thermal deposition----- and physical vapor transport " renders the claim indefinite because it is unclear how an etching process can be a deposition process.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1-3,5-21 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimbergen et al (6,712,927).

Grimbergen et al disclose an etching process of a multi-layer substrate, wherein a monitoring system monitors or determine the progress of a process being performed based on optical characteristics such as optical emission of individual layers to be etched relative to the underlayer by interferometry (col.7, lines 23-36 and col.13, lines 13-19).

Grimbergen et al do not explicitly teach determining dynamic etch progressions each based on the plurality of optical characteristics (optical emission) associated with the plurality of layer.

However, it would have been obvious to determine dynamic etch progressions, which are based on the individual layers because Grimbergen et al teach sequentially

Art Unit: 1765

etching the multiple layers by precisely change process conditions (col.13, lines 13-19 and lines 39-44).

As to claims 13 and 23, Grimbergen et al teach that multiple layers being etched sequentially based on their etch rates (col.13, lines 13-19) and optical emission is measured for the layers by interferometry (col.7, lines 32-36).

Therefore, it would have been obvious the measured optical emissions are corresponding first and second etch rates for a particular layer and underlying layer as taught by Grimbergen et al.

12. Claims 4 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimbergen et al (6,712,927) as applied to claims 1-3,5-21 and 23-24 above, and further in view of Applicant's admitted prior art.

Grimbergen et al discusses in the paragraph 11 above but remain silent about the determination of plurality of refractive indices each associated with the plurality of layers to be etched.

However, Applicant's admitted prior art teach that refractive indices are conventionally measured for the individual layer for precisely detecting the etch depth, wherein it may be assumed that the layer being etched with substantially uniform characteristics (see paragraph 0006).

Since, Grimbergen et al teach that multiple layers being etched sequentially based on the individual etch rates associated with the multiple layers (col.13, lines 13-19) and optical emission is measured for the layers by interferometry (col.7, lines 32-36).

Art Unit: 1765

Therefore, it would have been obvious to determine individual refractive indices associated with the multiple layers to be etched in order to provide a satisfactory prediction of the etched depth as suggested by Applicant's admitted prior art.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pradeep et al (6,300,251), Gu (6,498,045) and Masuda et al (6,755,932) disclose a dry etching process including monitoring the etch progresses through the various layers using optical detector.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shamim Ahmed
Examiner
Art Unit 1765

SA
February 1, 2005